DRAFT 22259.60

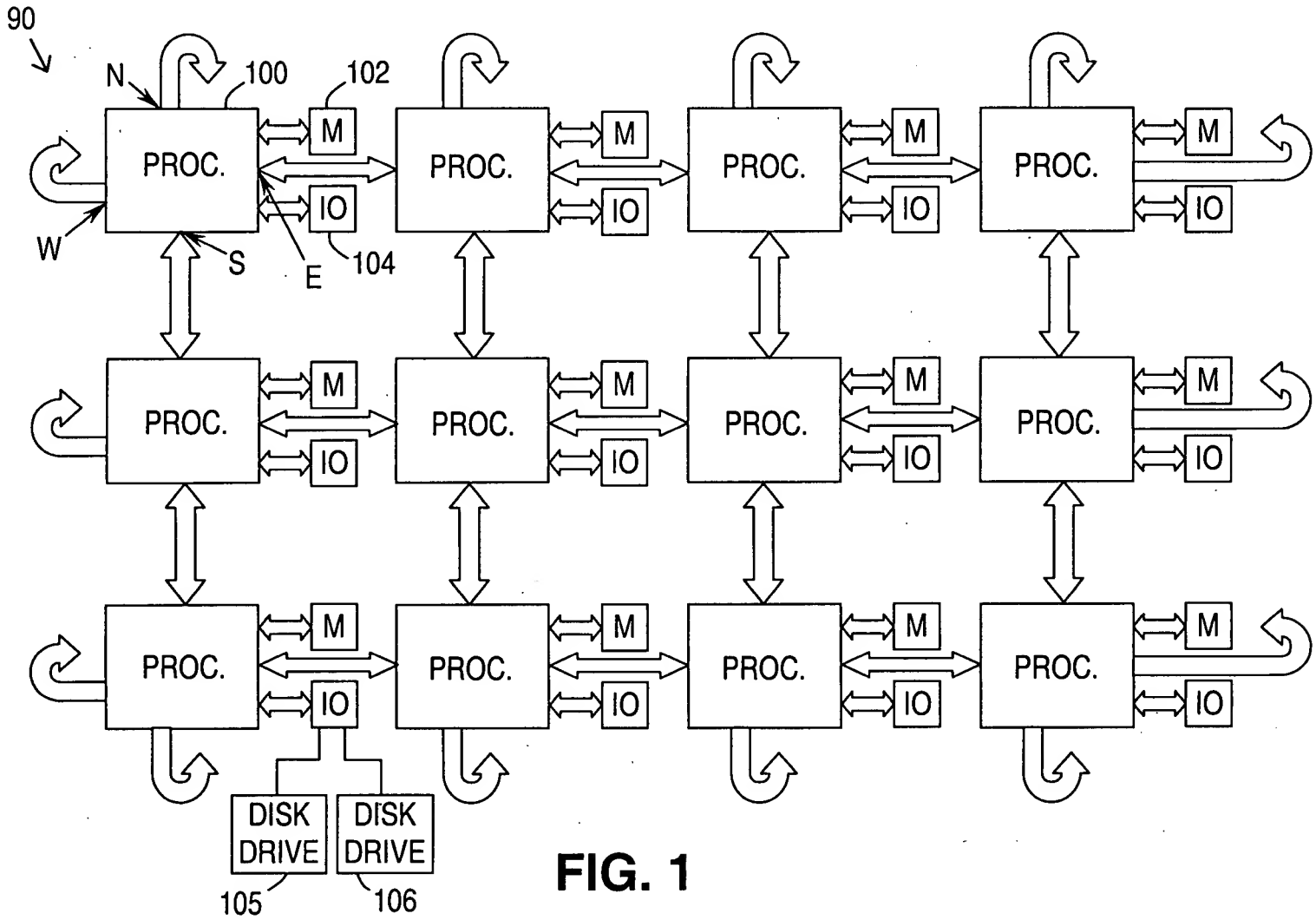



FIG. 1

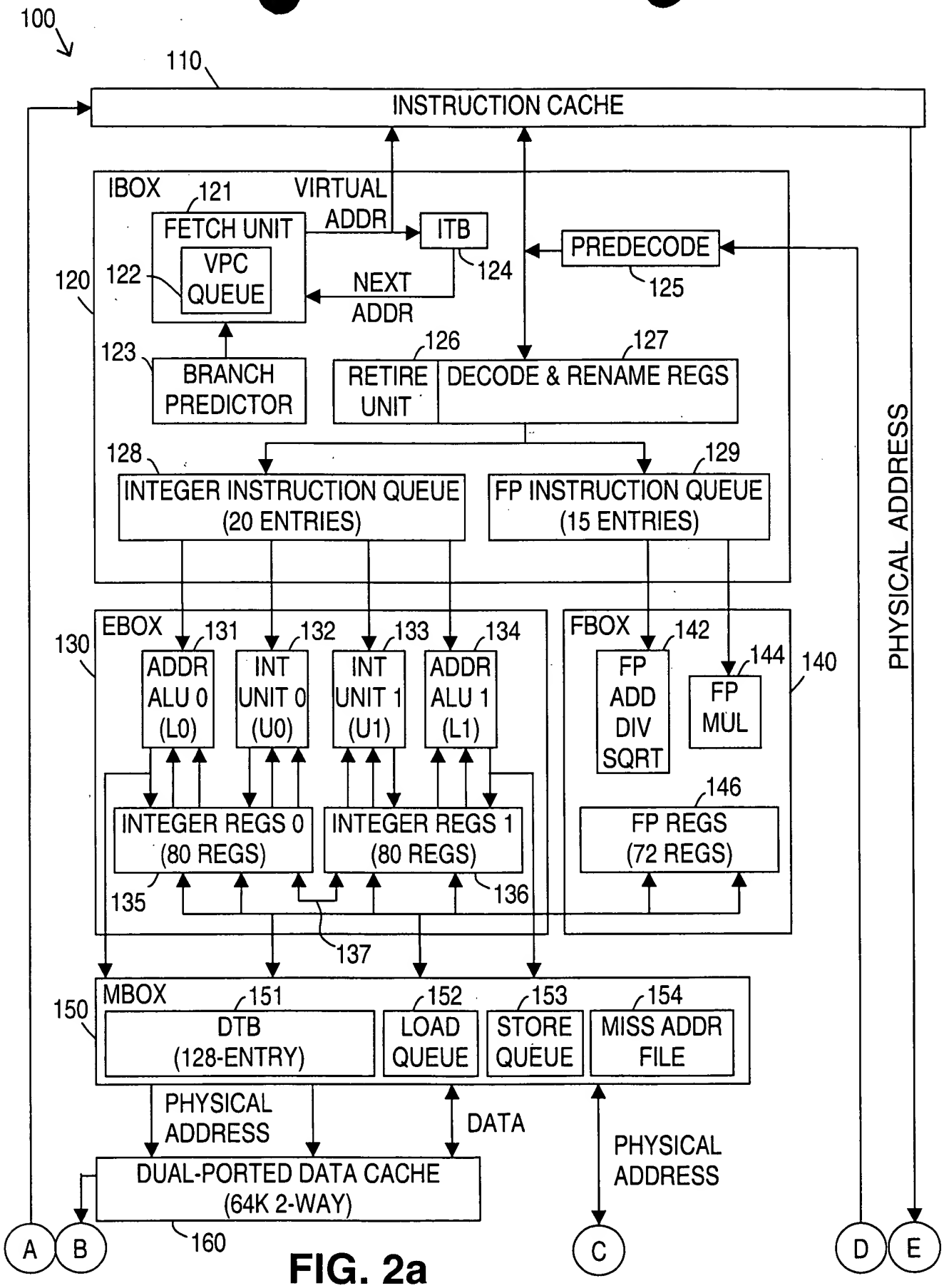

100
110
INSTRUCTION CACHE
IBOX
121
VIRTUAL ADDR
FETCH UNIT
ITB
PREDECODE
VPC QUEUE
122
120
124
NEXT ADDR
125
123
BRANCH PREDICTOR
126
127
RETIRE UNIT
DECODE & RENAME REGS
128
129
INTEGER INSTRUCTION QUEUE (20 ENTRIES)
FP INSTRUCTION QUEUE (15 ENTRIES)
PHYSICAL ADDRESS
EBOX
131
132
133
134
130
ADDR ALU 0 (L0)
INT UNIT 0 (U0)
INT UNIT 1 (U1)
ADDR ALU 1 (L1)
FBOX
142
144
140
FP ADD DIV SQRT
FP MUL
146
INTEGER REGS 0 (80 REGS)
INTEGER REGS 1 (80 REGS)
FP REGS (72 REGS)
135
136
137
MBOX
151
152
153
154
150
DTB (128-ENTRY)
LOAD QUEUE
STORE QUEUE
MISS ADDR FILE
PHYSICAL ADDRESS
DATA
PHYSICAL ADDRESS
DUAL-PORTED DATA CACHE (64K 2-WAY)
160
A
B
C
D
E

FIG. 2a

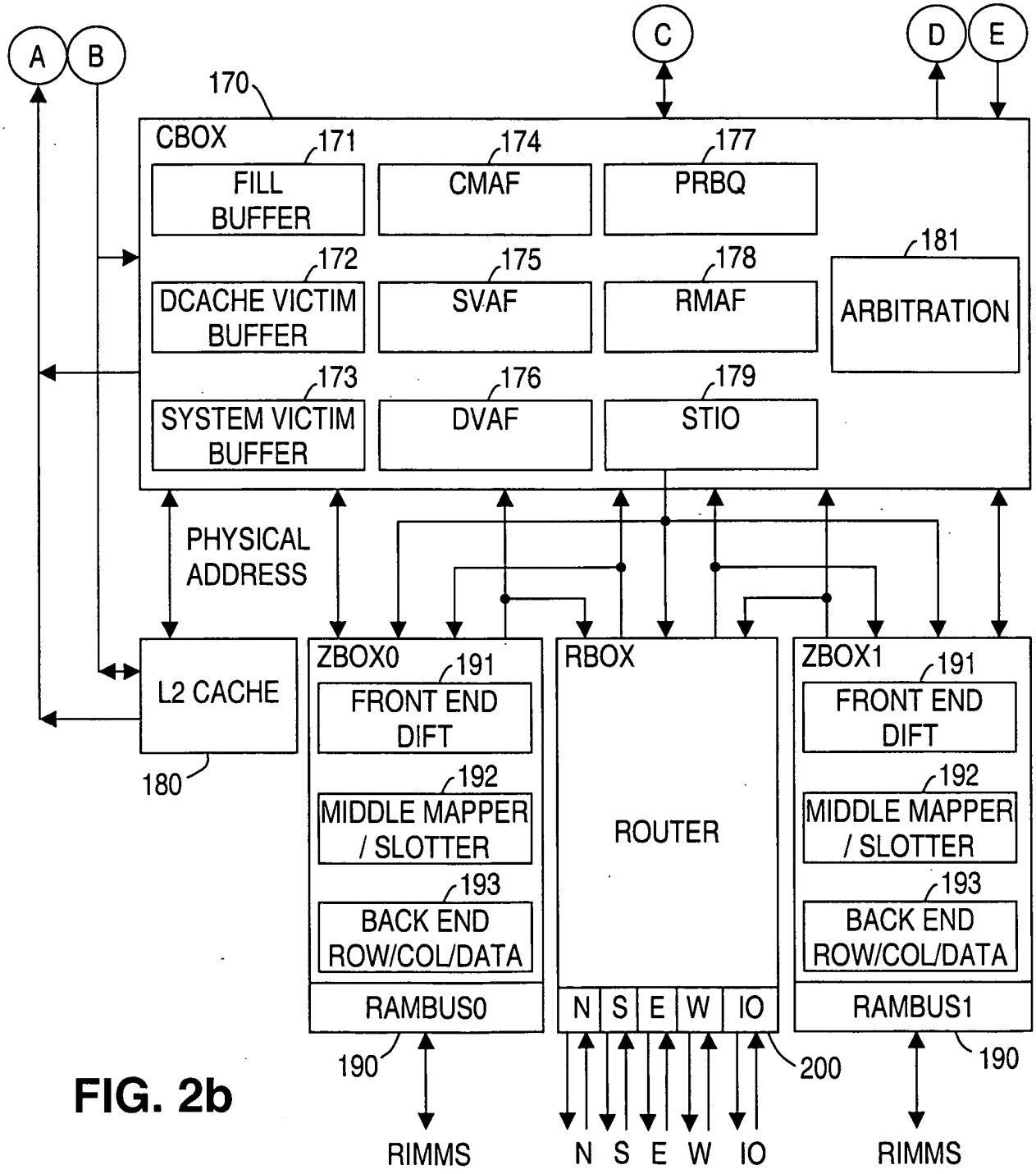

A
B
C
D
E
170
CBOX
171
FILL BUFFER
174
CMAF
177
PRBQ
172
DCACHE VICTIM BUFFER
175
SVAF
178
RMAF
181
ARBITRATION
173
SYSTEM VICTIM BUFFER
176
DVAF
179
STIO
PHYSICAL ADDRESS
L2 CACHE
180
ZBOX0
191
FRONT END DIFT
192
MIDDLE MAPPER / SLOTTER
193
BACK END ROW/COL/DATA
RAMBUS0
190
RIMMS
RBOX
ROUTER
N
S
E
W
IO
200
N S E W IO
ZBOX1
191
FRONT END DIFT
192
MIDDLE MAPPER / SLOTTER
193
BACK END ROW/COL/DATA
RAMBUS1
190
RIMMS

FIG. 2b

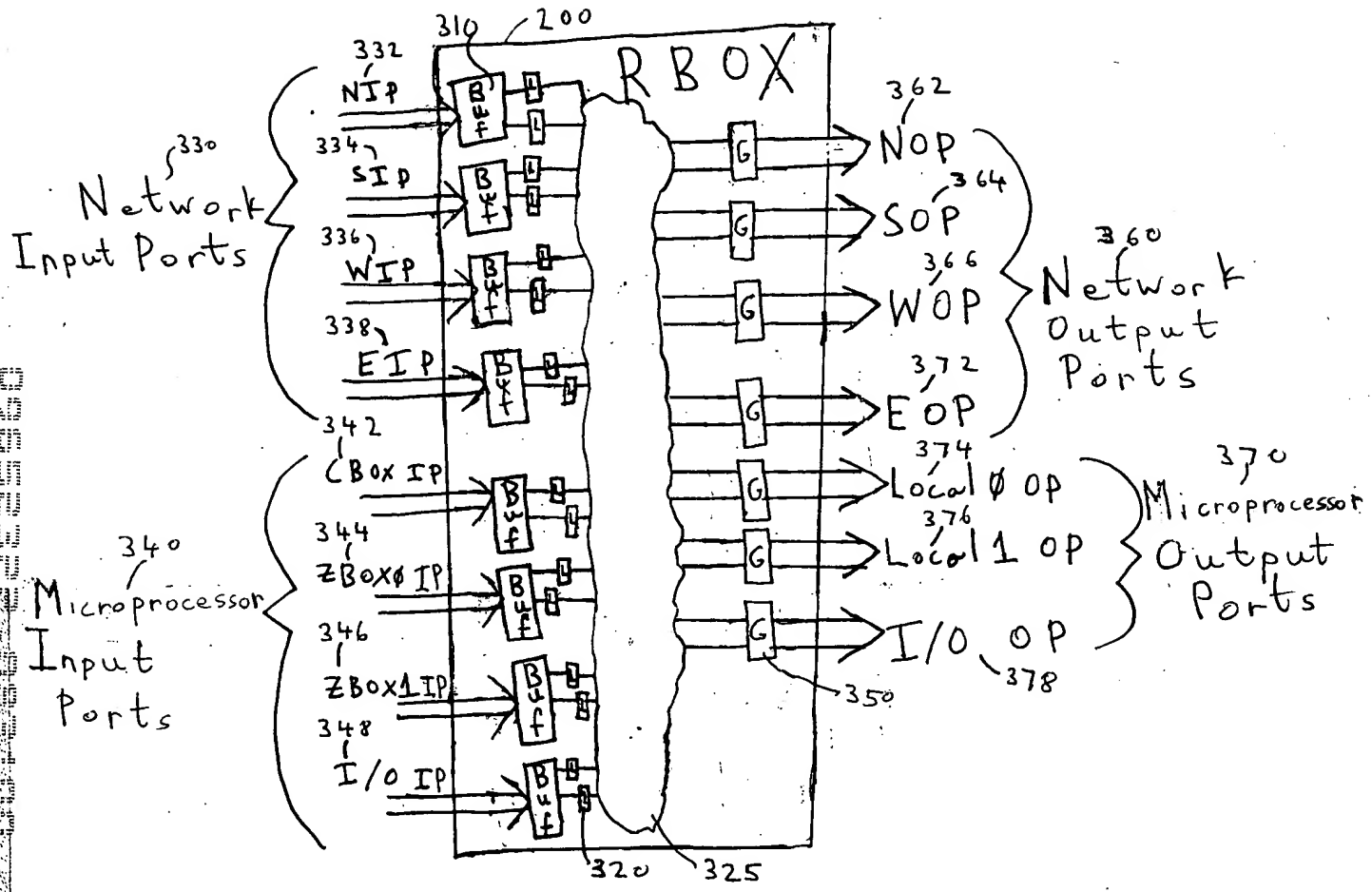
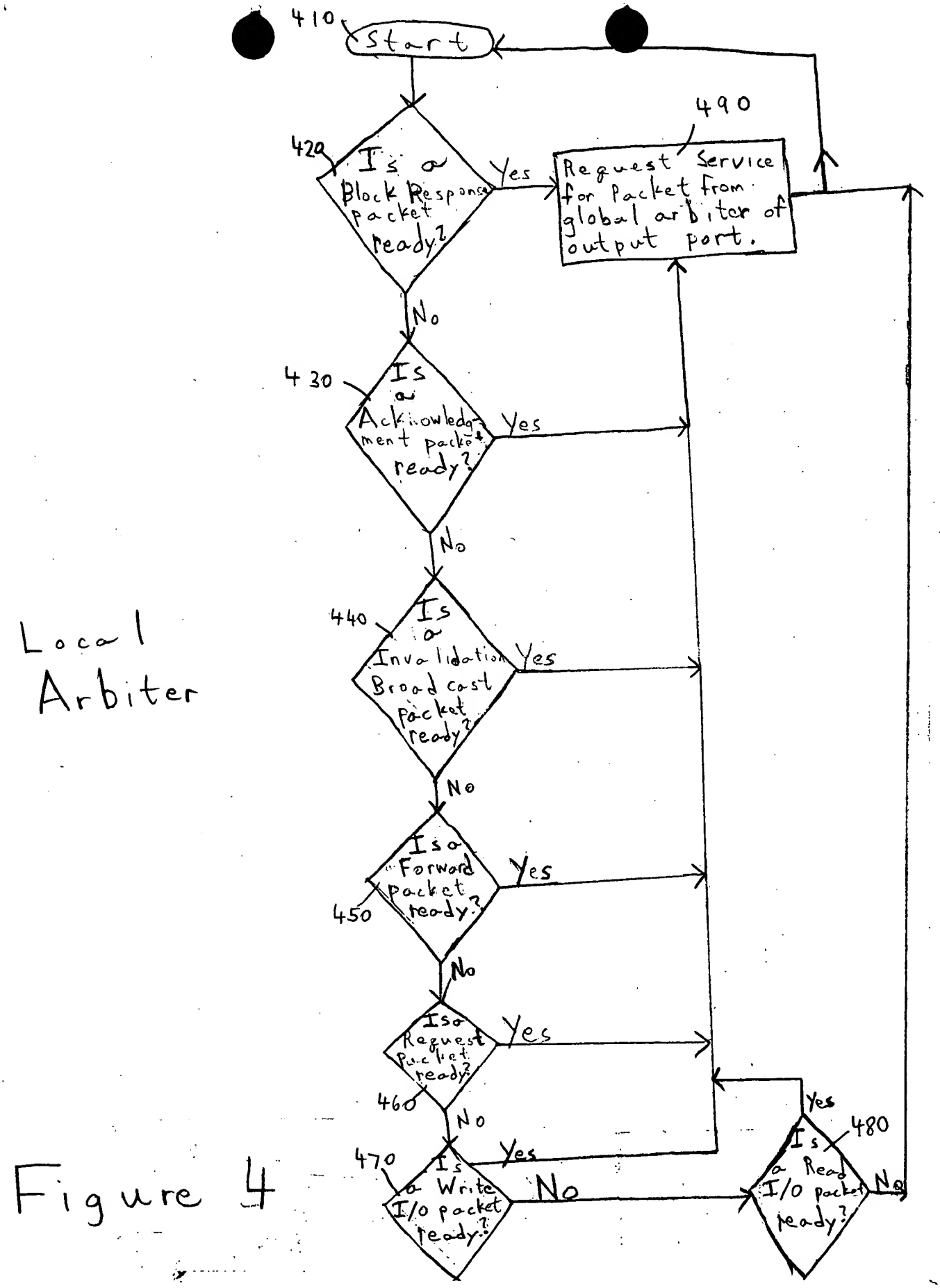

310
200
RBOX
332
NIP
330
Network
Input Ports
334
SIP
336
WIP
338
EIP
342
CBox IP
340
Microprocessor
Input
Ports
344
ZBox0 IP
346
ZBox1 IP
348
I/O IP
Buff
362
NOP
364
SOP
366
WOP
372
EOP
360
Network
Output
Ports
374
Local 0 OP
376
Local 1 OP
I/O OP
378
370
Microprocessor
Output
Ports
350
320
325

Figure 3




Local Arbiter

Figure 4

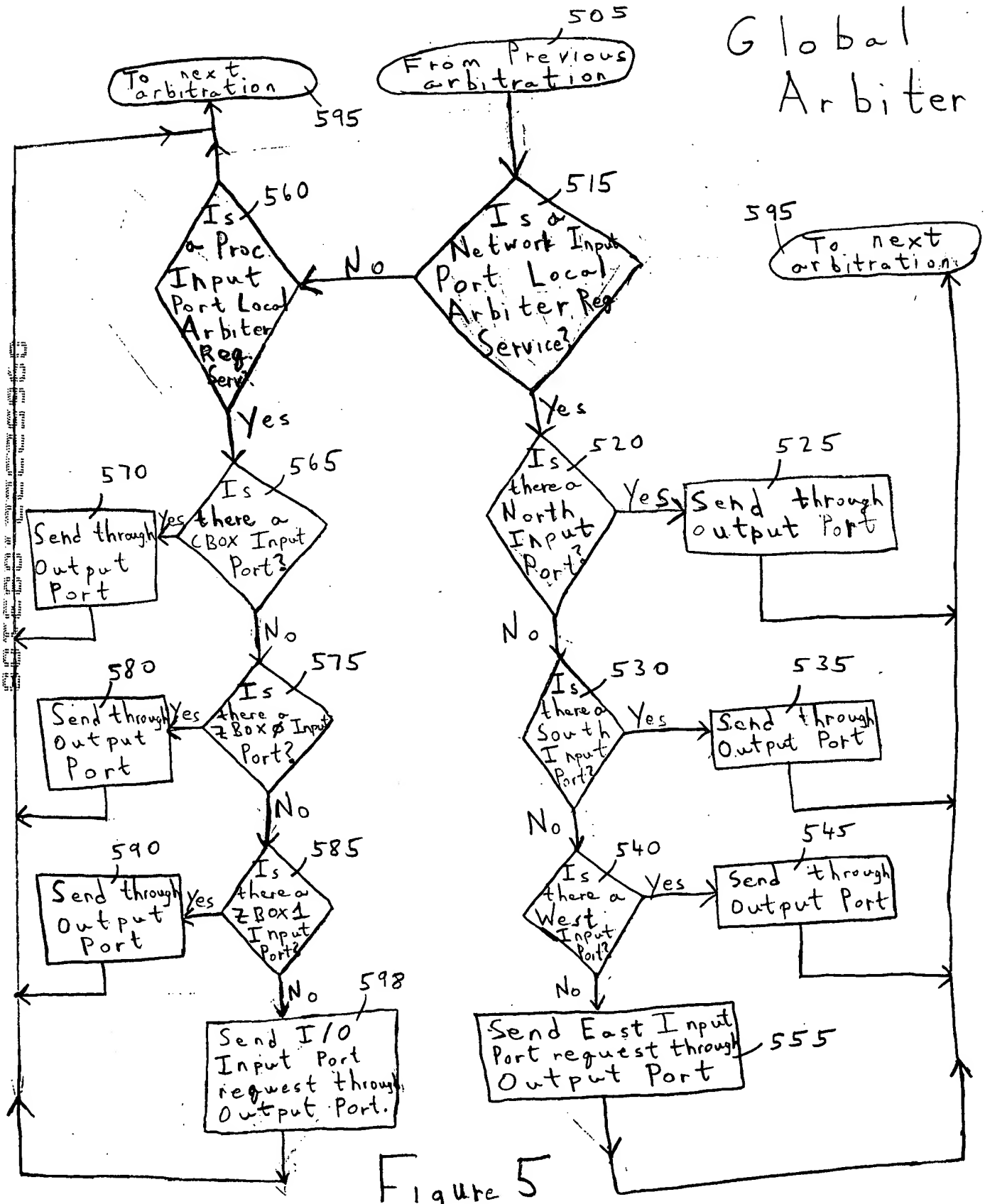

Global Arbiter
505
From Previous arbitration
515
Is a Network Input Port Local Arbiter Req Service?
No
560
Is a Proc Input Port Local Arbiter Req Serv.
Yes
565
Is there a CBox Input Port?
Yes
570
Send through Output Port
No
575
Is there a ZBox 0 Input Port?
Yes
580
Send through Output Port
No
585
Is there a ZBox 1 Input Port?
Yes
590
Send through Output Port
No
598
Send I/O Input Port request through Output Port.
Yes
520
Is there a North Input Port?
Yes
525
Send through output Port
No
530
Is there a South Input Port?
Yes
535
Send through Output Port
No
540
Is there a West Input Port?
Yes
545
Send through Output Port
No
Send East Input Port request through Output Port
555
595
To next arbitration
595
To next arbitration

Figure 5

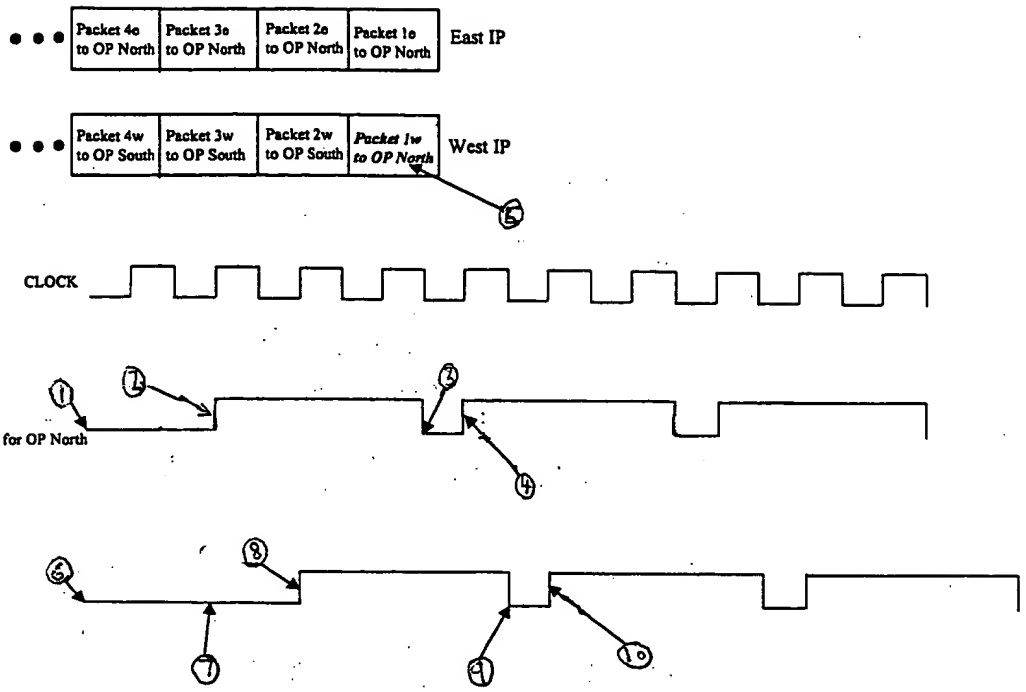

Packet 4e to OP North
Packet 3e to OP North
Packet 2e to OP North
Packet 1e to OP North
East IP
Packet 4w to OP South
Packet 3w to OP South
Packet 2w to OP South
Packet 1w to OP North
West IP
5
CLOCK
1
2
3
4
for OP North
6
8
7
9
10

Figure 6